

What is claimed is:

1. A composition, comprising:

a vinyl addition latex polymer having a first crosslinkable functional group;

a polyurethane dispersion having a second crosslinkable functional end group; and

5 an optional crosslinker,

wherein the composition is in the form of a waterborne coating composition, and wherein the first crosslinkable functional group of the vinyl addition latex polymer and the second crosslinkable functional end group of the polyurethane dispersion self-crosslink at low temperature upon coalescence.

10 2. The composition of claim 1, wherein the waterborne coating composition is essentially formaldehyde free.

3. The composition of claim 1, wherein the first crosslinkable functional group of the vinyl addition polymer is reactive.

15 4. The composition of claim 1, wherein the first crosslinkable functional group and second crosslinkable functional end group are selected from the group consisting of: acetoacetoxyl, diacetone, amine, hydrazide, and combinations thereof.

20 5. The composition of claim 1, wherein the first crosslinkable functional group is selected from acetoacetoxyl groups, diacetone groups, and combinations thereof, and wherein the second crosslinkable functional end group is selected from the group consisting of: amine groups, dihydrazide groups, and combinations thereof.

6. The composition of claim 1, wherein the vinyl addition latex polymer is selected from the group consisting of: acrylates, methacrylates, styrenes, and vinyl monomers.

7. The composition of claim 1, wherein the acid number of the vinyl addition latex polymer is between about 1 and 90.

25 8. The composition of claim 1, wherein the vinyl addition latex polymer has glass transition temperature of between about -70 and 130 °C.

9. The composition of claim 1, wherein the vinyl addition latex polymer comprises between about 10 and 90 weight percent of the coating composition.

10. The composition of claim 1, wherein the polyurethane dispersion comprises between about 10 and 90 weight percent of the coating composition.
11. The composition of claim 1, wherein the polyurethane dispersion is formed from the reaction product of a diisocyanate(s) and a polyol(s).
- 5 12. The composition of claim 11, wherein the diisocyanate includes aliphatic and aromatic diisocyanates.
13. The composition of claim 11, wherein the polyol includes polyester, polyether, and polycarbonate polyols.
14. The composition of claim 1, wherein the waterborne coating composition further
10 comprises a crosslinker.
15. The composition of claim 11, wherein the crosslinker comprises between about 0.5 and 20 weight percent of the coating composition.
16. The composition of claim 1, wherein the composition comprises a crosslinker selected from the group consisting of: polyamines, dihydrazides, diacetones, acetoacetoxyl groups,
15 and combinations thereof.
17. The composition of claim 1, wherein the coating composition further comprises adjuvants selected from the group consisting of: pigments, cosolvents, wetting agents, UV stabilizers, pH control agents, viscosity control agents, flow control agents, leveling agents, biocides, and combinations thereof.
- 20 18. The composition of claim 1, wherein the first and second functional groups are separated in separated phases of a dispersion.
19. The composition of claim 1, wherein the coating composition is available in a one-pack composition.
20. The composition of claim 1, wherein the coating composition comprises:
- 25 about 10 to 90 weight percent vinyl addition latex polymer having a first crosslinkable functional group, wherein the vinyl addition latex polymer has an acid number of between about 10 to 60;
- about 10 to 90 weight percent polyurethane dispersion having a second crosslinkable functional end group; and

about 1 to 20 weight percent crosslinker; and

wherein the coating composition is essentially formaldehyde free.

21. An article, comprising:

a substrate; and

5 a coating on the substrate, wherein the coating is a coalesced film made from a coating composition comprising:

a vinyl addition latex polymer having a first crosslinkable functional group;

a polyurethane dispersion having a second crosslinkable functional end group; and

a crosslinker,

10 wherein the coating composition is in the form of a waterborne coating composition, and wherein the coating composition is crosslinkable at low temperature upon coalescence.

22. The article of claim 21, wherein the substrate is selected from the group consisting of: wood, metals, plastics, ceramics and paper products.

23. The article of claim 21, wherein the substrate is wood.

15 24. A method of coating a substrate, comprising the steps of:

providing a coating composition comprising:

a vinyl addition latex polymer having a first crosslinkable functional group;

a polyurethane dispersion having a second crosslinkable functional end group;

and

20 water;

coalescing the coating composition at a low temperature to form a coating coating;

and

crosslinking the coating composition,

wherein the coating composition is essentially formaldehyde free.

25 25. The method of claim 24, wherein the coalescing of the coating composition is accomplished at a temperature between about 15 and 90 °C.

26. The method of claim 24, wherein the coalescing of the coating composition is accomplished at a temperature between about 20 and 70 °C.
27. The method of claim 24, wherein the coalescing of the coating composition is accomplished at a temperature between about 20 and 50 °C.